



The Archipelago Exchange<sup>SM</sup> (ArcaEx<sup>®</sup>), the world's largest electronic stock exchange in dollar value of shares traded, deployed Brocade-based SANs to achieve a high-performance environment and improve storage provisioning and utilization.

## SOLUTIONS

### Executive Summary

**Technology Challenge:**

Upgrade the existing Direct Attached Storage (DAS) environment to a Storage Area Network (SAN) that could share data in a heterogeneous IT environment and enable cost-effective disaster recovery

**Solution:**

A dual-fabric SAN solution using Brocade<sup>®</sup> SilkWorm<sup>®</sup> 12000 Directors and SilkWorm 3900 fabric switches; Sun and HP servers; EMC, HP, and Hitachi Data Systems storage; and VERITAS and Brocade management software

**Benefits:**

- Improved storage utilization up from an average of 30 percent to as much as 85 percent
- Cost-efficient remote data replication capabilities
- Centralized storage management and faster storage provisioning
- High availability to enhance business continuance

## Trading Up to a Brocade SAN

Based in Chicago, Archipelago began as an Electronic Communications Network (ECN) in 1997, and then became the first totally open, all-electronic stock exchange in 2002. Today, the Archipelago Exchange (ArcaEx) is the world's largest electronic stock exchange in dollar value of shares traded. Created as an alternative to traditional stock exchanges, ArcaEx has streamlined the trading process through all-electronic trading, rapidly making its mark upon the nation's equity markets.

For the first six years, Direct Attached Storage (DAS) dedicated to specific applications and server groups supported Archipelago's data storage needs. Faced with rapid data growth, strict regulatory requirements, and the need to strive for the best, most cost-effective solutions, ArcaEx's IT team appraised the storage model they were using and concluded that it no longer met their needs.

"Average disk utilization was well under 50 percent, we couldn't scale or provision storage as quickly as we wanted, and we needed the ability to leverage our storage resources across a variety of applications," explains Steve Rubinow, CTO. ArcaEx also needed to accommodate a multivendor heterogeneous environment. In designing the new storage architecture, Rubinow's team kept in mind ArcaEx's primary goals: accommodate dynamic data and application growth, ensure the reliability and security of applications, and implement a robust strategy for disaster recovery.

**SAN HELPS MAINTAIN A COMPETITIVE EDGE**

Given these criteria, and the need for a reliable, high-performance solution, the team planned to implement a Storage Area Network (SAN) based on Brocade SilkWorm 12000 Directors, which comprise two separate fabrics for

"We did a SAN investment analysis with a leading research organization, and the numbers show significant cost savings and ROI for Archipelago."

— Steve Rubinow, CTO, Archipelago

redundancy. "Speed is essential, along with high performance, stability, and reliability. These are the hallmarks that have made our exchange so successful, and why moving to a SAN was essential to maintain our competitive edge," notes Rubinow.

"We selected Brocade directors and fabric switches based on proven interoperability, market share, and the solid relationships Brocade enjoys with our other vendor partners," explains Rubinow. "We asked ourselves which combination of vendors would give us the best chance of getting it right the first time—that's how we made our choices." The heterogeneous SAN environment is comprised of EMC, Hitachi Data Systems, and HP storage systems, coupled with Sun and HP servers. ArcaEx uses Brocade Fabric Watch, Fabric Manager, and WEB TOOLS utilities to manage the SAN fabric, while managing the storage environment with software tools from VERITAS.

#### SECURED DATA ASSETS

ArcaEx averages several thousand transactions a second during a normal business day, so system failure is not an option. Accordingly, data is remotely replicated to a disaster recovery SAN that uses SilkWorm 3900 switches. Rubinow's goal is to achieve transparent failover to the disaster recovery site so that customers

would never be affected if problems occurred. Security is also a concern. As a result, ArcaEx has been testing Brocade Secure Fabric OS® to determine how it could solve its SAN security needs. "As the world's largest electronic stock exchange, we take security very seriously, both from a business and a regulatory perspective," notes Rubinow. "We're looking at capabilities like the enhanced zoning management offered in Secure Fabric OS because we need to implement data security on many different levels."

#### PLANNING FOR THE FUTURE

What does the future hold for ArcaEx? Rubinow and his team are already considering their next steps. "SANs have definitely become a critical part of the infrastructure supporting our business—they have allowed us to use storage in a much more sophisticated and flexible, yet cost-effective way," notes Rubinow. "One of our long-term goals is to make storage more of a liquid resource by creating network-based pools of storage that would be more responsive to our business needs. We're an entrepreneurial company—we move fast—and technology is key to maintaining our competitive edge."

For more information, visit [www.brocade.com](http://www.brocade.com).



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